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# मानक

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*Indian Standard*

SPECIFICATION FOR  
HOT-DIPPED GALVANIZED COATINGS ON  
ROUND STEEL WIRES

*( First Revision )*

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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR HOT-DIPPED GALVANIZED COATINGS ON ROUND STEEL WIRES

### ( *First Revision* )

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( *Continued on page 2* )

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*Indian Standard*  
SPECIFICATION FOR  
HOT-DIPPED GALVANIZED COATINGS ON  
ROUND STEEL WIRES  
( *First Revision* )

**0. FOREWORD**

**0.1** This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 12 September 1979, after the draft finalized by the Hot Dip Metallic Coatings Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** This standard was first published in 1968. In this revision, the scope of the standard has been modified to include only hot dip coatings, and certain modifications have been made in Table 1, relating to the requirements of minimum mass of coatings. It is intended to cover the requirements of electro-galvanized coatings in a separate standard.

**0.3** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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**1. SCOPE**

**1.1** This standard covers the requirements for zinc coating on hot dip galvanized wires of circular section of diameters from 0.200 mm up to and including 10.0 mm.

**1.2** This standard makes no reference to the quality of the wire itself. It does not apply to the articles made from wire which have been galvanized after fabrication. However, it makes provision for such testing to be carried out before or after the wire has been used for armouring, stranding, barbing or for any similar process.

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\*Rules for rounding off numerical values (*revised*).

**1.3** The relevant Indian Standard governing a particular type of wire should refer to this standard for specifying the requirements of zinc coating.

## **2. SUPPLY OF MATERIAL**

**2.1** General requirements relating to the supply of material shall conform to IS : 1387-1967\*.

## **3. GENERAL REQUIREMENTS**

**3.1 Quality of Zinc** — Zinc conforming to at least Grade Zn 98 specified in IS : 209-1966† shall be used for the purpose of galvanizing.

**3.2 Galvanizing** — The steel wires may, as far as practicable, be galvanized in accordance with IS : 2629-1966‡.

## **4. COATING REQUIREMENTS**

**4.1 Mass of Zinc Coating** — When determined in accordance with IS : 6745-1972§, the mass of zinc coating shall not be less than the mass specified in Table 1. For medium coating the requirements given in Table 2 shall apply.

**4.1.1** If the wire is tested after being used for armouring, stranding, barbing or any similar process, the figure for minimum mass of coating as specified in Table 1 shall be reduced by 5 percent.

**4.1.2** Care shall be exercised to avoid damaging the samples in detaching them from the finished strand or cable.

### **4.2 Uniformity of Zinc Coating**

**4.2.1** Uniformity of zinc coating shall be determined according to IS : 2633-1972 ||.

**4.2.2** At all points more than 25 mm from a cut end, the coating shall be able to withstand the minimum number of dips specified in Tables 1 and 2.

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\*General requirements for the supply of metallurgical materials (*first revision*).

†Specification for zinc (*second revision*).

‡Recommended practice for hot dip galvanizing of iron and steel.

§ Methods for determination of weight of zinc coating on zinc coated iron and steel articles.

|| Methods of testing uniformity of coating on zinc coated articles (*first revision*).



TABLE 1 MINIMUM MASS OF COATING AND NUMBER OF DIPS

(Clauses 0.2, 4.1, 4.1.1 and 4.2.2)

NOMINAL DIAMETER OF GALVANIZED WIRE, mm		LIGHT COATED WIRE						HEAVILY-COATED WIRE					
Above	Up to and Including	Soft*			Hard†			Soft*			Hard†		
		Mass of coating	Number of dips		Mass of coating	Number of dips		Mass of coating	Number of dips		Mass of coating	Number of dips	
			1 min	$\frac{1}{2}$ min		1 min	$\frac{1}{2}$ min		1 min	$\frac{1}{2}$ min		1 min	$\frac{1}{2}$ min
(1)	(2)	(3) g/m <sup>2</sup>	(4)	(5)	(6) g/m <sup>2</sup>	(7)	(8)	(9) g/m <sup>2</sup>	(10)	(11)	(12) g/m <sup>2</sup>	(13)	(14)
0.20	0.32	20	No test required	No test required	15	No test required	No test required	45	No test required	No test required	45	No test required	No test required
0.32	0.40	20	do	do	15	do	do	70	do	do	70	do	do
0.40	0.50	20	do	do	15	do	do	90	—	1	90	—	1
0.50	0.56	30	do	do	20	do	do	100	1	—	100	1	—
0.56	0.63	30	do	do	20	do	do	110	1	—	110	1	—
0.63	0.71	30	do	do	20	do	do	120	1	—	120	1	—
0.71	0.80	30	do	do	30	do	do	140	1	1	140	1	1
0.80	0.90	40	do	do	30	do	do	150	1	1	150	1	1
0.90	1.00	40	do	do	40	do	do	170	2	—	150	1	1
1.00	1.25	40	do	do	40	do	do	180	2	—	160	2	—
1.25	1.40	50	do	do	40	do	do	200	2	—	180	2	—
1.40	1.60	60	—	1	50	—	—	210	2	—	190	2	—
1.60	1.80	60	—	1	60	—	1	230	2	1	200	2	—
1.80	2.00	70	1	—	60	—	1	240	3	—	210	2	—
2.00	2.24	70	1	—	60	—	1	240	3	—	210	2	—
2.24	2.50	80	1	1	70	1	—	260	3	—	230	2	1
2.50	2.80	90	1	1	70	1	—	260	3	1	230	2	1
2.80	3.15	100	1	1	70	1	—	270	3	1	240	3	—
3.15	3.55	110	1	1	80	1	—	270	3	1	250	3	—
3.55	4.00	120	1	1	90	1	1	280	3	1	260	3	—
4.00	5.00	130	2	—	100	1	1	290	3	1	275	3	1
5.00	7.10	140	2	—	110	1	1	290	3	1	290	3	1
7.10	10.00	140	2	—	110	1	1	300	4	—	300	4	—

\*Soft indicates galvanized after drawing and annealing. Tensile strength up to 545 N/mm<sup>2</sup> (55 kgf/mm<sup>2</sup>).†Hard indicates galvanized after drawing, but without annealing. Tensile strength above 545 N/mm<sup>2</sup> (55 kgf/mm<sup>2</sup>).

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**TABLE 2 REQUIREMENTS FOR MEDIUM COATINGS***(Clauses 4.1 and 4.2.2)*

NOMINAL DIAMETER OF GALVANIZED WIRE, mm				MASS OF COATING  g/m <sup>2</sup>	NUMBER OF DIPS	
					1 min	$\frac{1}{2}$ min
0.200 and up to 0.32 mm inclusive				30	—	—
Above 0.32	„	0.40	„	35	—	—
0.40	„	0.50	„	45	—	—
0.50	„	0.56	„	60	—	1
0.56	„	0.63	„	60	—	1
0.63	„	0.71	„	60	—	1
0.71	„	0.80	„	75	—	1
0.80	„	0.90	„	75	—	1
0.90	„	1.00	„	75	—	1
1.00	„	1.25	„	90	1	—
1.25	„	1.40	„	90	1	—
1.40	„	1.60	„	95	1	—
1.60	„	1.80	„	95	1	—
1.80	„	2.00	„	105	1	—
2.00	„	2.24	„	105	1	—
2.24	„	2.50	„	110	1	1
2.50	„	2.80	„	120	1	1
2.80	„	3.15	„	120	1	1
3.15	„	3.55	„	135	1	1
3.55	„	4.00	„	135	1	1
4.00	„	5.00	„	150	2	—

**4.2.3** If the wire is tested after being used for armouring, stranding, barbing or for any similar process, the minimum number of dips shall be reduced by one half-minute dip.

**4.3 Freedom from Defects** — The zinc coating shall be uniform, adherent, reasonably smooth and free from such imperfections as flux, ash and dross inclusions, bare patches, black spots, pimples, lumpiness, runs, rust stains, bulky white deposits, and blisters (the terms have been defined in IS : 2629-1966\*).

## 5. ADHESION OF ZINC COATING

### 5.1 Test Specimen

**5.1.1** The test specimen consists of a piece of wire long enough to allow the test to be carried out properly.

\*Recommended practice for hot dip galvanizing of iron and steel.

**5.1.2** The test specimen is wound round a cylindrical mandrel so as to form close spirals as specified in Table 3.

**TABLE 3 ADHESION TEST**

NOMINAL DIAMETER OF WIRE	MINIMUM COMPLETE TURNS OF WRAP	RATIO BETWEEN MANDREL DIAMETER AND OF WIRE
(1) mm	(2)	(3)
Up to and including 3.55	10	4
Over 3.55 up to and including 7.10	10	6
Over 7.10 up to and including 10.0	$\frac{1}{2}$ ( one 90° bend )	6

## 5.2 Procedure

**5.2.1** Winding shall be carried out at a rate not more than 15 turns per minute.

**5.2.2** When so wound or bent around the mandrel, the zinc coating shall remain adherent to the steel wire and shall be considered as meeting this requirement if owing to such winding or bending, it does not flake off, nor crack to such an extent that there is possibility of removing any zinc by rubbing with bare fingers, the use of finger nail being not allowed.

## 6. SAMPLING

**6.1** The degree of sampling shall be that specified in the standard governing the wire or article fabricated from wire. In the absence of such a standard, the degree of sampling shall be agreed to between the galvanizer and the purchaser.

**6.1.1** Coil for testing shall be selected by the purchaser.

**6.1.2** Portions of wire which are obviously damaged shall not be used for samples.



AMENDMENT NO. 1 MAY 1984

TO

IS:4826-1979 SPECIFICATION FOR HOT-DIPPED GALVANIZED  
COATINGS ON ROUND STEEL WIRES

(First Revision)

Addenda

(Page 3, clause 0.2.1) - Add the following new clause after clause 0.2:

'0.2.1 In order to rationalize the requirements of different types of galvanized wires, coatings have been grouped into three types, that is, heavy, light and medium. For general guidance, Appendix A indicating applicability of various types of coatings on different wires has been included.'

(Page 8, Appendix A) - Add the following as Appendix A:

APPENDIX A  
(Clause 0.2.1)

APPLICABILITY OF TYPE OF COATING FOR  
DIFFERENT APPLICATIONS

Application	Type of Coating		
	Heavy	Light	Medium
Fencing wire	X	X	-
Stay strand wire	X	-	-
Signal strand wire	X	-	-
Chain link wire	X	-	-
Rope wire	X	-	X
Spring wire	-	-	X

*Application**Type of Coating*

	<i>Type of Coating</i>		
	Heavy	Light	Medium
Cable armouring wire	X	-	-
ACSR wire	X	-	-
Mild steel wire	X	X	-
Telephone wire	X	-	-
Cycle spoke wire	-	X	-
Barbing wire(line)	X	X	-
Barbing wire(point)	-	X	-
P.C. wire	X	-	-
Lighting conductor wire	X	-	-
Rubber hose rein- forcement wire	X	X	-

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X Applicable

- Not applicable

(SMDC 28)

**AMENDMENT NO. 2 NOVEMBER 1999**  
**TO**  
**IS 4826 : 1979 SPECIFICATION FOR HOT-DIPPED**  
**GALVANIZED COATINGS ON ROUND STEEL WIRES**  
*( First Revision )*

*( Amendment No. 1, clause 0.2.1, Appendix A, seventh row )* — Substitute the following for the existing:

<i>Application</i>	<i>Type of Coating</i>		
	Heavy	Light	Medium
Cable armouring wire	×	—	×
( MTD 20 )			

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Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 3 JUNE 2001**  
**TO**  
**IS 4826 : 1979 SPECIFICATION FOR HOT - DIPPED**  
**GALVANIZED COATINGS ON ROUND STEEL WIRES**  
**( *First Revision* )**

**( *Page 4, clause 3.1* ) — Substitute the following for the existing:**

**‘3.1 Quality of Zinc — Zinc used for galvanizing shall conform to any of the grades specified in IS 209 : 1992 Zinc ingot or IS 13229 : 1991 Zinc for galvanizing.’**

**( MTD 20 )**

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**Reprography Unit, BIS, New Delhi, India**